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Distributional Analysis of Several Tax Proposals

by

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INTRODUCTION

The purpose of this brief report is to provide a distributional analysis of several recent tax proposals, focusing especially on the proposals made (on January 12th) by Governor Dukakis. The analysis in this report is based primarily on tax simulations conducted using the Massachusetts Tax Simulation Models. These models were developed by the author in order to provide detailed analyses of the distributional characteristics of the Massachusetts tax system. The models are described in detail in the Second, Sixth, and Ninth Interim Reports of the Special Commission on Tax Reform.

The analysis of the personal income tax presented in this report differs from that presented in the Second Interim Report for three reasons. First, a number of changes were made in the personal income tax since the interim report was completed in mid-1986. To the extent possible, the simulations include all changes enacted during the past two years, including Chapter 106, which was enacted in July 1988. Second, the simulations in this report are based on data from the March 1987 Current Population Survey (CPS). The analysis in the Second Interim Report is based on data from the March 1984 CPS. The March 1987 CPS provides detailed economic and demographic information for a sample of 5,886 persons in 2,442 Massachusetts families. The CPS income data are for the 1986 calendar year. These data have been updated to 1988 by inflating each source of income by the 1986-88 per capita growth

rate for that source of income in Massachusetts. The growth rate data are from Data Resources' April 1988 control forecast. Finally, the analysis in this report is conducted on the basis of Census families and unrelated individuals, while the earlier analysis presented the data by filing units. In the large majority of cases, each family contains only one filing unit, however, in some cases, families include more than one filing units.

The rest of this report is divided into six sections. In the next section data is presented on the distribution of personal income tax liabilities and tax burdens across income classes under current tax law provisions. The simulation discussed in this section, and in the rest of the report are for calendar year 1988. The following section discusses briefly a simulation of the personal income tax under the assumption that 1983 income tax law was currently in effect. The next two sections provide an analysis of the distributional consequences of a number of the major provisions of the tax proposals introduced by Governor Dukakis on January 12, 1989. The proposals to increase the effective rate of taxation on most realized capital gains is discussed first, followed by a discussion of the proposed increases in excise tax rates on motor fuels, alcoholic beverages, and cigarettes. The next section of the report presents a simulation of a refundable income tax credit designed to counteract the tax burdens on low-income families from increases in the motor fuels excise tax. There is a brief concluding section.

THE MASSACHUSETTS PERSONAL INCOME TAX IN 1988

Table 1 presents the results of a simulation of the personal income tax for calendar year 1988. For the purpose of this analysis families and unrelated individuals are divided into twelve income classes. (For convenience, unrelated individuals will be referred to as one-person families). The income concept used here, called "total income" is much more comprehensive than Adjusted Gross Income. It includes money income from all sources, whether subject to taxation or not, and the cash value of food stamps and federal energy assistance.

The data in table 1 show that the personal income tax in Massachusetts is progressive. Average tax burdens rise over the entire range of the income distribution. The average tax liabilities and burdens presented in table 1 are calculated over all families in each income class, including those eligible for the state's "no tax status".

INCOME TAX CHANGES SINCE 1983

Between 1983 and 1988 there have been a number of changes in the Massachusetts personal income tax, most of which have resulted in reduced income tax liabilities for Massachusetts residents. The major changes include an increased exemption for dependents and for non-working spouses, substantial increases in "no tax status", the implementation of the Limited Income Tax Reduction Credit, and the elimination the 7½ percent income tax surcharge. Two tax changes, the full taxation of unemployment compensation

Table 1

The Massachusetts Personal Income Tax, 1988

Total Income	Number of Families	% of Total	Average Tax Liability	Average Tax Burden
Less than $5,000	62,280	2.6 %	$ 0	0.0 %
5,000-9,999	284,400	12.0	6	0.1
10,000-14,999	231,780	9.8	139	1.1
15,000-19,999	208,860	8.8	370	2.1
20,000-24,999	187,960	7.9	626	2.8
25,000-29,999	166,350	7.0	873	3.2
30,000-34,999	182,880	7.7	1,081	3.3
35,000-39,999	149,560	6.3	1,344	3.6
40,000-44,999	146,550	6.2	1,589	3.8
45,000-49,999	117,670	5.0	1,891	4.0
50,000-74,999	365,290	15.4	2,475	4.1
More than $75,000	261,590	11.1	5,441	4.6
Total	2,365,150	100.0 %	$ 1,503	2.8 %

Source: Massachusetts Tax Simulation Models.

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and the abolition of the refundable sales tax credit, resulted in tax increases for some taxpayers.

The data in table 2 illustrate the impact of a simulation of the income tax using provisions in effect in calendar year 1983. This simulation allows us to answer the question: how much higher would tax liabilities be if 1983 tax law was still in effect in 1988. The second column of table 2 shows that at every level of income, taxpayers benefited from lower tax liabilities, with the dollar reduction growing as income rises. However, relative to the taxes that would have been paid under terms of 1983 tax law, the reductions are larger at lower incomes. While tax liabilities are completely eliminated for those with incomes under $5,000, taxes are reduced, on average, by 12 percent for those with incomes between $25,000 and $30,000, and by less than eight percent for those with incomes over $75,000.

The number of families eligible for "no tax status" has also grown; from 417,050 under 1983 law to 508,700 under current law, an increase of 36 percent. The data in table 2 show that if the tax code had remained unchanged since 1983, tax revenue from the income tax would have been nearly $400 million higher than it is today. Over one-half (54 percent) of the increase would have been paid by the 26 percent of families with incomes over $50,000.

It is reasonable to ask if the changes in the personal income tax since 1983 have increased or decreased the progressivity of the income tax. We know that increases in personal exemptions have increased progressivity, and the elimination of the 7½

Table 2

The Massachusetts Personal Income Tax

Comparison of 1983 Law with Current (1988) Law

Massachusetts Residents, 1988

Total Income	Average Liability 1983 Law	Change in Average Liability 1983 to 1988 Law	Dollar Change in Liability 1983 to 1988 Law (in millions)	Percent of Total Change
less than $5,000	$ 5	-5	$ 0.3	0.1 %
5,000-9,999	35	-29	8.2	2.1
10,000-14,999	206	-66	15.4	4.0
15,000-19,999	464	-94	19.6	5.1
20,000-24,999	724	-98	18.4	4.8
25,000-29,999	991	-118	19.6	5.1
30,000-34,999	1,220	-138	25.3	6.6
35,000-39,999	1,494	-150	22.4	5.8
40,000-44,999	1,754	-165	24.2	6.3
45,000-49,999	2,086	-195	22.9	6.0
50,000-74,999	2,716	-241	88.2	23.0
More than $75,000	5,897	-455	119.1	31.0
Total	$ 1,666	-162	$ 383.7	100.0 %

Source: Massachusetts Tax Simulation Models.

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percent surtax has reduced progressivity. Although all summary measures of tax progressivity are subject to criticism, one measure in wide use is the Suits index. Suits indices have values between minus one and plus one, with minus numbers indicating regressive taxes, and positive numbers indicating progressive taxes. If 1983 law was in effect today, the income tax would have a Suits index value of 0.115. This compares to a Suits index value of 0.132 for the tax under current law. The small increase in the value of the Suits index indicates a slight increase in the progressivity of the income tax.[1]

PROPOSED CHANGES IN CAPITAL GAINS TAXATION

Under terms of the Tax Reform Act of 1986, 100 percent of realized capital gains are subject to federal income taxation. In Massachusetts, under current law, only 50 percent of long-term capital gains are taxed. As taxable capital gains are taxed at a rate of ten percent, the 50 percent capital gains deduction, effectively reduces the rate of taxation on capital gains to five percent. The Dukakis Administration has proposed several changes in the way capital gains are taxed. Subject to several exceptions, the proposal calls for the full taxation of realized capital gains. This will have the effect of raising the tax rate on capital gains to ten percent, equalling the rate of taxation on

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[1] I consider this to be a highly tentative conclusion. Care must be taken in interpreting changes in the Suits index in cases when substantial tax changes occur at both the top and the bottom of the income distribution.

dividend and out-of-state interest income. The Dukakis Administration also proposes to retain the 50 percent capital gains deduction on gains from the sale of a principle residence, and to provide deductions to long term capital gains from "primary investments" in corporations doing business in Massachusetts.[2]

The data in table 3 provides a rough estimate of the distributional impact of the Administration's capital gains proposals.[3] The data shows that the increased tax liabilities will be concentrated among taxpayers with incomes over $75,000. Most low and average income families have no capital gains income, and hence will pay no extra income tax under the Dukakis proposals. In fact, it is estimated that only about 15 percent of all families have any income from capital gains, with the percentage of taxpayers with capital gains increasing as income rises.

The data in the second column of table 3 over-states the impact of the Dukakis Administration capital gains proposals. As most middle and high-income taxpayers itemize their deductions on their federal income tax returns, and state income tax payments are an allowable itemized deduction, any increase in state income

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[2] "Primary investments" are defined as purchases of stock in corporations doing business in Massachusetts and certifying that the proceeds from stock purchases will be used to create jobs in Massachusetts. The capital gains deduction, varying from 25 to 75 percent, depends on the length of time the taxpayer holds the primary investment.

[3] The simulations that underlie the data in table 3 are based on the assumption that the increase in the effective rate of taxation on long-term capital gains will reduce the rate of capital gains realization in Massachusetts by 15 to 20 percent.

Table 3

Massachusetts Personal Income Tax with Administration Capital Gains Proposals

Massachusetts Residents, 1988

Total Income	Average Liability Admin. Proposal	Change in Liability from Current Law	Change in Liability w/ Federal Offset	Percent of Total Dollar Change in Liability
Less than $5,000	$ 0	$ 0	$ 0	0.0 %
5,000-9,999	6	0	0	0.0
10,000-14,999	140	1	1	0.1
15,000-19,999	372	3	3	0.2
20,000-24,999	630	5	5	0.4
25,000-29,999	893	20	20	1.4
30,000-34,999	1,113	31	31	2.3
35,000-39,999	1,359	15	14	0.9
40,000-44,999	1,609	20	19	1.2
45,000-49,999	1,932	41	37	2.0
50,000-74,999	2,541	66	58	9.7
More than $75,000	6,216	774	562	81.8
Total	$ 1,608	$ 105	$ 80	100.0 %

Source: Massachusetts Tax Simulation Models.

tax liabilities will reduce itemizers' federal income tax liability by the amount of the increase in state income taxes times the taxpayers' federal marginal tax rate. This reduction in federal income tax liabilities is known as the "federal offset". The data in the third column of table 3 shows the average impact of the Governor's capital gains proposals **net of the federal offset.** For families with incomes over $75,000, the ability to itemize deductions reduces the average increase in tax liabilities by nearly 30 percent.

The final column of data in table 3 shows that over 90 percent of the increase in tax liabilities resulting from the proposed changes in capital gains taxation fall on families with incomes over $50,000, with about 82 percent of the increase paid by those with incomes over $75,000.

PROPOSED CHANGES IN EXCISE TAXATION

The Governor has proposed increases in the gasoline (more precisely, motor fuels), alcoholic beverages, and cigarette excise taxes. The gasoline excise tax would be increased from 11 cents per gallon to 17 cents per gallon, with additional two cents per gallon increases to go into effect in January 1990 and January 1991 respectively. The excise taxes on alcoholic beverages would be increased by 50 percent from their current levels, and the cigarette excise tax will be increased by four cents per pack, from 26 to 30 cents per pack for regulars and from 32.5 to 36.5 cents per pack for 100s.

In order to estimate the distributional impact of excise taxation it is necessary to have data on family expenditures on each taxed item. The primary source for expenditure data is the Consumer Expenditure Surveys (CES) conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics. The CES data show that expenditures in general, and spending on gasoline, alcoholic beverages, and cigarettes, in particular, take a much larger share of total income for low income families, than for middle and high income families. This pattern of spending means that these excise taxes are regressive in nature, placing a higher burden on low income taxpayers as compared to those with higher incomes.

It should be noted that the conclusion that excise taxes are highly regressive has been challenged by some economists. Most calculations of tax burdens, including the ones presented in this report, are based on annual income. The use of annual income in tax burden calculations can make taxes appear more regressive than they really are, if those with low incomes are only temporarily poor, perhaps because of a spell of unemployment or illness, and if spending decisions are made on the basis of longer run, and perhaps even lifetime, income.

In a recent paper, James Poterba of MIT argues that, if families make their decisions on how much to spend on the basis of their expected lifetime income, then we should measure tax burdens by comparing spending to total annual expenditures, rather than annual income, because expenditures give "...a more accurate measure of lifetime resources than does annual income". In fact,

if spending on gasoline, alcoholic beverages, and cigarettes are calculated as a percent of total expenditures, excise taxes on these items become much less regressive, with tax burdens on low income families falling dramatically.[4]

The importance of the argument, stated in the previous paragraphs, depends on two factors: first, the extent to which individuals make decisions on how much to spend on taxed items, in this case, on gasoline, alcoholic beverages, and cigarettes, on the basis of their expected long-run income, as opposed to their current (annual) income; and second, the assumption that most people with low incomes are only temporarily poor. If spending decisions tend to be made on the basis of current income, and if income mobility is in fact limited for many people near the bottom of the income distribution, then it is appropriate to calculate excise tax burdens on the basis of annual income, as they are in this report. The evidence on both these issues is incomplete, and it is clear that not enough is yet known about determinants of spending behavior or about the income mobility at the bottom end of the income distribution.

The data in table 4 allows us to assess the distributional impact of a six cent per gallon increase in the gasoline excise tax. The calculations in this table are based on the assumption that 73 percent of motor fuel purchases in the state are made by

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[4] See James M. Poterba, "Lifetime Incidence and the Distributional Burden of Excise Taxes", Paper presented at the Annual Meetings of the American Economics Association, New York, N.Y., December 1988.

Table 4

Analysis of Six Cent Per Gallon Increase in the Motor Fuels Excise Tax

Massachusetts Residents, 1988

Total Income	Excise Tax at 17¢/gallon	Increase from Current Tax	Tax Burden at 17¢/gallon	Change in Tax burden
less than $5,000	$ 27	$ 9	0.59 %	0.20 %
5,000-9,999	59	20	0.78	0.27
10,000-14,999	87	30	0.71	0.24
15,000-19,999	86	30	0.49	0.17
20,000-24,999	101	35	0.45	0.15
25,000-29,999	126	43	0.46	0.16
30,000-34,999	148	51	0.45	0.15
35,000-39,999	167	57	0.45	0.15
40,000-44,999	184	63	0.44	0.15
45,000-49,999	177	61	0.37	0.13
50,000-74,999	212	73	0.35	0.12
More than $75,000	262	90	0.25	0.09
Total	$ 145	$ 50	0.48 %	0.17 %

Source: Massachusetts Tax Simulation Models.

individuals, with the remaining 27 percent being accounted for by purchases by business firms, non-profit institutions, and government agencies. The data in table 4 indicates that in 1988 the average family's gasoline excise tax liability would increase by $50 from $95 to $145. As expected, dollar expenditures on gasoline, and hence, excise tax payments increase as income rises. However, the excise tax burden, excise taxes as a percent of income, falls as income rises. The data in the last column of table 4 indicate that the largest increase in gasoline excise tax burden will be for families with incomes between $5,000 and $15,000.[5]

Table 5 presents data on the impact of the proposed increase in cigarette excise taxes. The data in the first column indicate that about half of the families have at least one smoker. The data in the remaining columns provides average data only for those families that include smokers, and hence bear some of the burden of the cigarette excise tax. It is interesting to note that excise tax liabilities are relatively insensitive to income. Although spending on cigarettes, and hence on the excise tax, is somewhat higher for those with high incomes as compared to those with low incomes, the differences are not large. For this reason,

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[5] The data in this table are averages across all families. Needless to say, those families without access to a car will not face any direct increase in tax liability. It should be noted however, that the increased gasoline excise taxes paid by businesses in Massachusetts will most likely be reflected in higher prices for goods and services purchased by Massachusetts residents. This indirect impact of the excise tax increase is not reflected in the data presented in table 4.

Table 5

Analysis of Proposed Increase in Cigarette Excise Tax

Massachusetts Residents, 1988

Total Income	% of Families Paying Tax	Average Tax w/ Proposed Increase	Increase from Current Tax	Increase in Tax burden
less than $5,000	33.9 %	$ 101	$ 12	0.27 %
5,000-9,999	42.9	126	17	0.25
10,000-14,999	41.5	107	15	0.12
15,000-19,999	45.7	97	12	0.07
20,000-24,999	50.9	138	17	0.08
25,000-29,999	48.8	133	17	0.06
30,000-34,999	54.9	180	23	0.07
35,000-39,999	45.2	138	27	0.07
40,000-44,999	60.2	172	27	0.06
45,000-49,999	53.0	159	20	0.04
50,000-74,999	54.9	199	31	0.05
More than $75,000	50.5	165	21	0.02
Total	49.2 %	$ 150	$ 21	0.09 %

Source: Massachusetts Tax Simulation Models.

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the cigarette excise tax, and any increase in the excise tax rate, are highly regressive. The data in the rightmost column of table 5 indicates that the increase in cigarette tax burden is more than ten times greater for families with incomes below $10,000 than for families with incomes in excess of $75,000.

The distributional impact of the increase in excise taxes on alcoholic beverages is similar to the pattern observed for cigarettes. The data in table 6 illustrate the increase in tax liabilities and tax burdens for those consuming alcoholic beverages. Although the dollar increase in excise taxes tends to increase as income rises, the increase in tax burdens is the highest for those with incomes under $10,000.

THE IMPACT OF A REFUNDABLE CREDIT

The data presented in the previous section indicates that the proposed increases in excise taxes place the heaviest burdens on those with the lowest incomes. One way to protect low income taxpayers from additional tax burdens, while retaining the potential benefits of increased excise taxation, is to institute a refundable tax credit targeted to low income families. In addition to providing needed tax revenue for the Commonwealth, excise taxes can serve as useful tools in support of other state policies. For example, increases in cigarette and alcoholic beverage excise taxes may, admittedly to a limited degree, discourage the consumption of cigarettes and alcohol. The increase in the motor fuels excise tax may discourage automobile

Table 6

Analysis of Proposed Increase in Alcoholic Beverages Excise Tax

Massachusetts Residents, 1988

Total Income	% of Families Paying Tax	Average Tax w/ Proposed Increase	Increase from Current Tax	Increase in Tax burden
less than $5,000	37.5 %	$ 57	$ 19	0.42 %
5,000-9,999	39.9	50	19	0.23
10,000-14,999	49.1	49	16	0.13
15,000-19,999	49.9	64	21	0.12
20,000-24,999	69.7	56	18	0.08
25,000-29,999	65.8	72	22	0.08
30,000-34,999	71.1	83	27	0.08
35,000-39,999	72.8	59	20	0.05
40,000-44,999	76.2	78	24	0.06
45,000-49,999	73.4	73	24	0.05
50,000-74,999	71.7	88	29	0.05
More than $75,000	79.5	121	38	0.04
Total	63.5 %	$ 76	$ 25	0.09 %

Source: Massachusetts Tax Simulation Models.

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use and encourage the use of public transportation. By combining increases in these excise taxes with a refundable low income credit, we can raise the price of gasoline, cigarettes, and alcoholic beverages without causing a substantial reduction in the economic well-being of low income families.

The data in table 7 shows the impact of one possible credit. Eligibility for the credit is restricted to low-income families. Families are entitled to the credit if their Massachusetts adjusted gross income (AGI) is below a ceiling that depends on family size. The AGI levels under which a family is entitled to a credit are as follows:[6]

Family size	Maximum AGI
1	$14,000
2	$19,600
3	$20,600
4	$21,600
5	$22,600
6 or more	$23,600

Under the credit simulated in table 7, all families with incomes below the above AGI ceilings are entitled to a credit that equals $15 for each family member. If the amount of the credit exceeds the income tax liability of the family, any excess credit will be refunded.

If the above credit had been implemented for the calendar year 1988, and if all families eligible for the credit had taken

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[6] These AGI levels are identical to the maximum levels for receipt of the Limited Income Tax Reduction Credit as proposed in the Commission's Draft Option Paper "Family Policy and the Taxation of Incomes".

Table 7

Analysis of Low-Income "Gasoline Excise Tax" Credit

Massachusetts Residents, 1988

Total Income	Families Receiving Credit	% of All Families	Average Credit	Families Receiving Refundable Credit	Average Refundable Credit
less than $5,000	62,280	100 %	$ 15	62,280	$ 15
5,000-9,999	284,400	100	24	264,780	25
10,000-14,999	218,700	94	28	134,210	30
15,000-19,999	123,990	59	33	60,430	32
20,000-24,999	63,630	34	35	30,560	28
25,000-29,999	40,960	25	36	9,430	36
More than 30,000	225,830	18	26	11,930	35
Total	1,019,785	43	27	573,618	26

Source: Massachusetts Tax Simulation Models.

full advantage of it, the cost to the state would be $27.7 million, with 43 percent of all families being entitled to a credit. Among families eligible for the credit, the average credit would equal $27 per year. It should be noted that because many families have income from sources not included in AGI, some families with total incomes in excess of $25,000 are eligible for the credit. At the cost of some additional administrative complexity, eligibility could be tied to total income rather than AGI. This would more precisely target the credit to those with low incomes, and would somewhat reduce the revenue cost of the credit.

The data in the last two columns of table 7 shows that about 570,000 families would be entitled to refundable credits. These include all families with incomes below the current "no tax status" limits, plus a number of families with small income tax liabilities in the absence of the proposed credit. It should be noted that in order for the credit to be successful in shielding low income families from the impact of the increases in excise taxes, considerable effort must be made to inform low income families, especially those who now pay no income taxes, of the availability of the credits.

CONCLUSIONS

The major purpose of this report is to provide a brief distributional analysis of a major portion of the Administration's recent tax proposals. The most reasonable way to summarize the

results of this analysis is to look at the combined impact of the proposed changes in capital gains taxation and in the excise taxation of motor fuels, cigarette, and alcoholic beverage. By adding the increase in tax liabilities from these four sources _as a proportion of income_, we get a good measure of the increased tax burden from the Administration's proposal.

On average, taxes will increase by 0.36 percent of income. The pattern of increases across income classes is U-shaped. The increased burden of those with incomes less than $5,000 is 0.45, and the increased burden for families with incomes between $5,000 and $10,000 is 0.47. The increase of burden is smaller in the next income class (0.35), and averages 0.29 for those families with incomes between $15,000 and $75,000. The largest increase in burden, 0.66, is experienced by the top income class, those with incomes above $75,000.

This pattern of increases in tax burdens indicates that the average increase is similar over a large portion of the income distribution. The data indicate that 56 percent of all Massachusetts families will experience relatively small tax increases as a result of the Administration's proposals, increases of less than 0.25. On the other hand, approximately 13 percent of Massachusetts families will experience increases in tax burdens in excess of 0.75 percent of income. As expected, the families facing these large increases generally have incomes under $15,000 or over $50,000. By combining the Governor's proposals with a low-income refundable credit it would be possible to reduce somewhat the increased burdens on those families with the lowest incomes.

Table 8

Change in Tax Burdens of Various Proposals

Massachusetts Residents, 1988

Total Income	Total Changes With Federal Offset	Total Changes Without Federal Offset
less than $5,000	.45 %	.45 %
5,000-9,999	.47	.47
10,000-14,999	.35	.35
15,000-19,999	.27	.27
20,000-24,999	.27	.27
25,000-29,999	.31	.31
30,000-34,999	.34	.34
35,000-39,999	.26	.27
40,000-44,999	.27	.27
45,000-49,999	.27	.28
50,000-74,999	.28	.29
75,000 and over	.52	.66
Total	.34 %	.36 %

Source: Massachusetts Tax Simulation Models